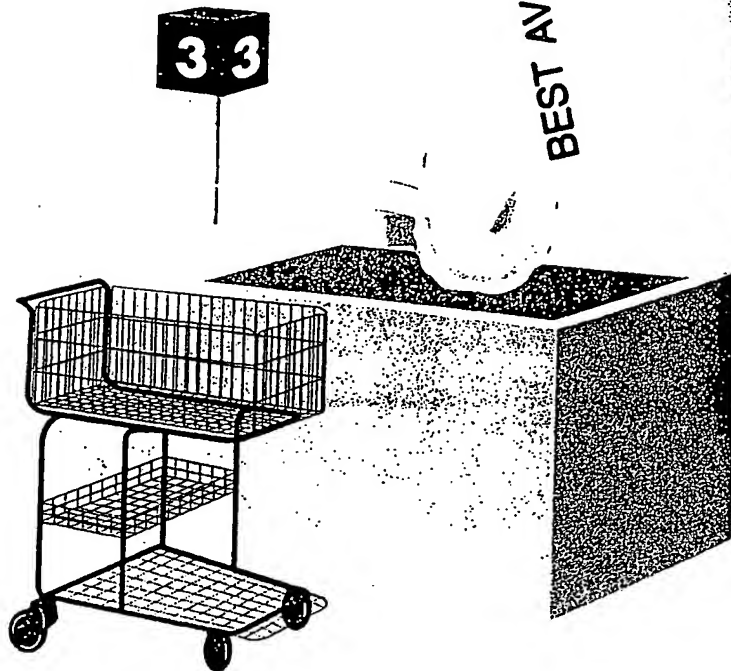


CHAPTER

44

Shopping on the Internet



BILLIONS of dollars are spent every year on shopping on the Internet—and if think tanks and market research firms are to be believed, that's only the beginning. The Internet will eventually revolutionize the way we shop in the same way it's revolutionized the way that we work, the way that we get information, and the way that we communicate.

Online shopping is made possible through the use of encryption techniques—the ability to scramble information as it's sent through the Internet so that no one can read it except the intended recipient. Encryption is used to scramble credit card information—the primary way that people pay when buying online. (For more information about encryption, and to see how encryption works, turn to Chapter 49, "Cryptography, Privacy, and Digital Certificates." And to see how encryption can keep email private, turn to Chapter 17, "How Email Works.")

Most of what you look at when you visit a shopping site on the Internet is contained in databases on Web servers. These databases have information about the products for sale at the site—and they're also used to automatically generate the HTML pages that make up the shopping site. So, for example, when a new product becomes available, information about that product is put into a database, and the database in turn creates a new item on a Web page describing the product. And you, in turn, can look at that product and decide whether you want to buy it.

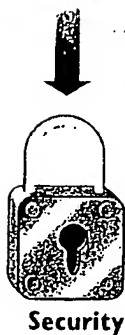
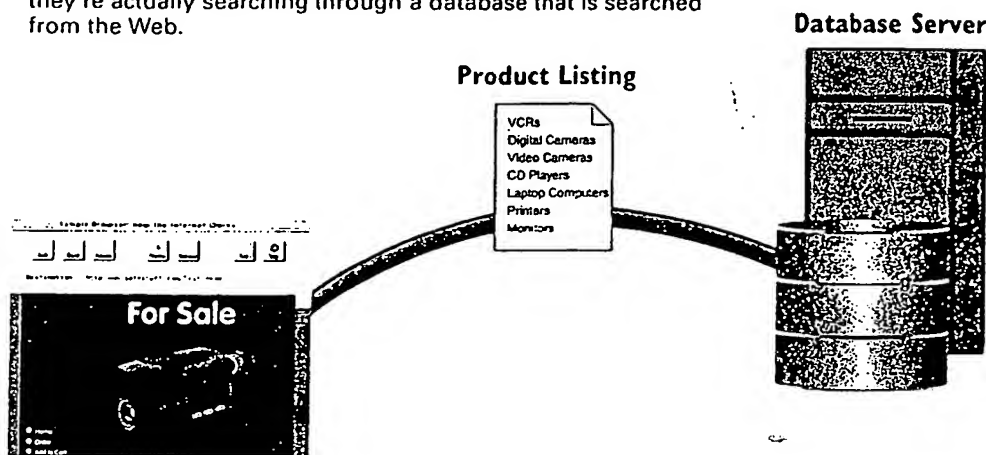
Databases are also used when you use virtual shopping carts—portions of a Web site where you place items you're considering buying. Before buying, you can take items out of the cart or can put new items in. The Web database tracks everything you put into and out of the cart. And "cookies"—little bits of data—are often used in concert with databases to make shopping carts work. (For more information about cookies, turn to Chapter 48, "How Cookies, Passports, and Web Tracking Work.")

Web databases are also used to complete the shopping transaction when you buy. So when you decide you want to buy something from a site and you fill out a form and send in your credit card information, that information is sent to a Web database. The database, in turn, checks the validity of your credit card. If it's valid, the database sends a confirmation to you. And it in turn sends off an order to a warehouse or other distribution method that ships the product to you.

In this chapter, we'll look at how online buying and virtual shopping carts work. We'll also look at one of the newer shopping technologies—electronic wallets, sometimes called *ewallets*. And finally, you'll see how one of the most popular kinds of buying sites work—online auctions.

How Online Buying Works

- 1** Most shopping sites are built on top of databases, so when customers visit a Web site and browse or search for a product, they're actually searching through a database that is searched from the Web.



- 2** When customers see a product they want to buy, they'll usually pay by credit card. Before filling out a form with their credit card information, they're usually sent to a secure section of the Web site, in which encryption will be used to scramble the data.



- 3** After customers are in the secure area, they fill out a form, including their credit card information. As they fill the forms out, their information stays on their computers and isn't yet sent out over the Internet.

- 4** When the form is filled out, the customer presses a "Submit" or similar button to send the information from the customer's computer to the site's secure transaction server. As the information is sent out over the Internet, it's encrypted so that it can't be read.

Encryption



Transaction Server



- 5** The transaction server receives the encrypted information and decrypts it. It then checks with the credit card company to ensure that the card is valid and can be used.

Credit Company



OK to Accept?

OK

Thank you for your order!

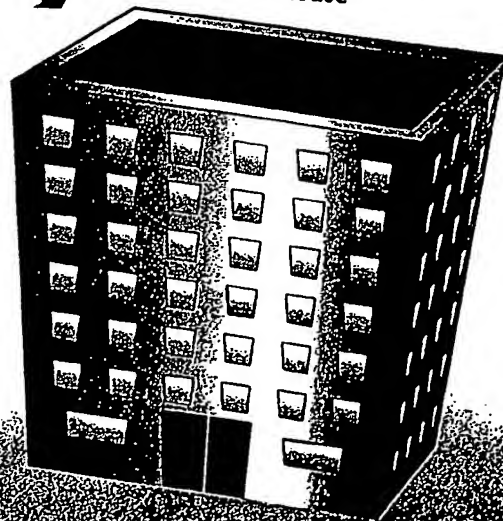
- 6** The site confirms the order, and the Web page refreshes and displays a page that the customer can print out, confirming the order. Many sites will also follow up by sending an email message.



Ship the goods

- 7** The transaction server sends an order to the warehouse or other designated area that fills the order, and the order is completed as any other order is, by shipping via the mail or express mail service.

Warehouse



How Online Shopping Carts Work

There are many different kinds of online shopping carts, used in many different ways. This illustration shows one that uses cookies. For more information about cookies, turn to Chapter 48, "How Cookies, Passports, and Web Tracking Work."

- 2** When the person completes the registration form, it's sent to the Web database. The database creates a record for that person and sends the person a "cookie"—a small piece of data that sits on the person's hard disk and can be used to identify that person.

Cookie



- 4** The Web server in turn writes a "shopping cart" to the cookie, identifying the item that the person wants to put in his shopping cart. More than one item can be put in the shopping cart in this way.

- 5** When the person is ready to check out his items, he goes to a Web page containing his shopping cart. When he goes to the page, the cookie tells the Web server what items to display on the page.





Registration

Name:

E-mail:

Address:

City:

State:

Zip:

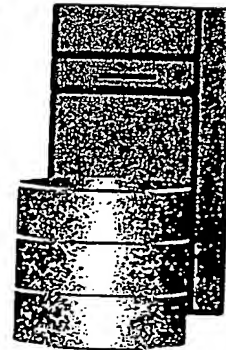
Phone:

Country:

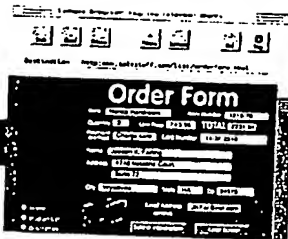
Submit

1 Before a shopping cart can be used, a person must register with the site, filling out such information as name, address, and other personal information. Sometimes a credit card number is required as well.

Database Server



3 When the shopper thinks he wants to buy something, he clicks on it, which puts it in his shopping cart. When he clicks on an item, that information is sent to the Web server.



Order Form

Item:

Quantity:

Price:

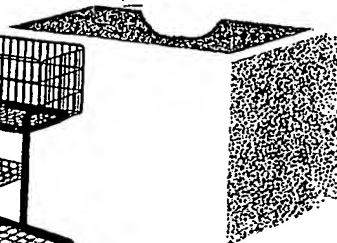
Total:

Submit

6 When someone decides to buy the items in the shopping cart, he sends in credit card information. When the items are bought, the server deletes information about those items in the cookie. When the person visits his shopping cart, it will now be empty because the information about his purchases has been deleted from the cookie.

33

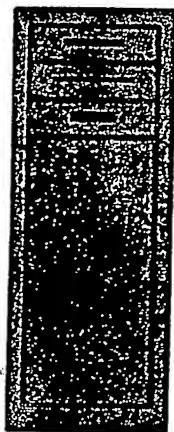
Checkout



How Electronic Wallets Work

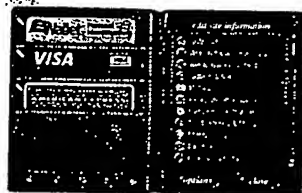
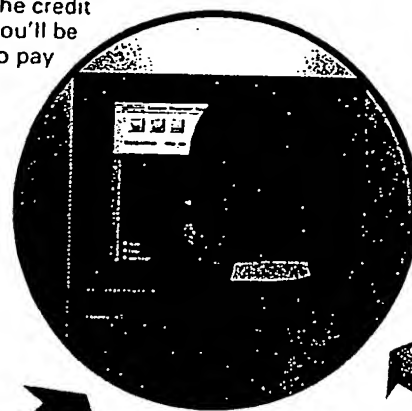
Electronic wallets allow you to store information about your credit cards and similar information so that you don't need to fill out forms every time you want to buy something from a Web site. There are many kinds of electronic wallets. This illustration shows how one called eWallet works.

Web Server



- 1** eWallet is a piece of client software that runs on your computer. (Some electronic wallets, though not eWallet, run on Internet servers.) Typically, people will download eWallet from an Internet site, or it might be sent to them when they sign up for a credit card. The first step to using it is to download the software and install it.

- 2** After installing the software, you enter a user-name and password that must be used to access the eWallet. That way, no one else can get at your credit card information. After entering a user name and password, you enter information about the credit cards you'll be using to pay online.



Download & Install

- 4** When customers are at a shopping site and want to use eWallet, they go to the page on the site where they must enter information about themselves and their credit card information. They open eWallet and drag the name of their credit card onto the Web page. EWallet recognizes where information needs to be filled in, such as name, address, and credit card information. It puts information into the form just as if the form were being filled in by hand. While the customer is filling out the information on the form, it is still local on the customer's computer; it hasn't yet gone out over the Internet.

Example Browser: Show the Internet Store

Destination: <http://www.internet7.com/111/InternetStore.asp>

Order Form

Item:	Product Name:	Unit Price:	Quantity:	Sub Total:
Total:			Grand Total:	Grand Total:

Shipping Address:

City: State: Zip:

Phone: Fax:

Order Number:

Order Date:

Order Status:

Order Total:

Order Subtotal:

Order Tax:

Order Shipping:

Order Handling:

Order Insurance:

Order Notes:

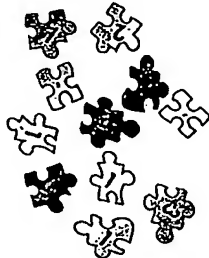
Order Comments:

Order Footer:



- 3** All the information in the eWallet is encrypted and stored locally on the computer. That way, no one can get at the credit card and personal information except someone who has the username and password for the eWallet.

Encryption



- 5** After the form is filled out, the customer clicks a button to place the order. As the credit card number and other information is sent over the Internet, it's encrypted by the shopping site, so that no one can read it as it's sent. Only when the encrypted information is received by the shopping site can it be read.

Encryption

